IN THE CLAIMS

Cancel claims 4 and 5 without prejudice and add new claims 15 - 22 as set forth below. Amend the claims as indicated by the markings.

1. (Currently Amended) A component operating with bulk acoustic waves, said component comprising :

a carrier substrate;

a lower electrode that faces said ~~the~~ carrier substrate[[,]] ;

an upper electrode; ~~and~~

a piezoelectric layer ~~arranged~~ between said lower electrode and said upper electrode, said piezoelectric layer comprising a multi-layer assembly ~~the two electrodes~~; and

an acoustic mirror ~~being arranged~~ between said ~~the~~ carrier substrate and said ~~the~~ lower electrode, said acoustic mirror comprising at least one layer with a high acoustic impedance and at least one layer with ~~of a~~ low acoustic impedance ~~being~~ arranged in a stack, said at least one layer of low acoustic impedance including an ~~with the~~ uppermost mirror layer of said ~~the~~ stack ~~being the layer of low acoustic impedance~~, said at least one layer with high acoustic impedance being formed as a structured layer, said ~~the~~ uppermost mirror layer exhibiting a varying thickness, ~~with~~ an upper boundary surface of said ~~the~~ uppermost mirror layer being planar to said ~~the~~ lower electrode, and said ~~the~~ uppermost layer enclosing a structure ~~structures~~ of said ~~the~~ structured layer and forming a seal with a layer of said at least one ~~surface covered by the structure with one of a mirror~~ layer with a low acoustic impedance or with said ~~arranged below the structured layer and the~~ carrier substrate outside of a area covered by said structure.

2. (Currently Amended) A component according to claim 1, wherein said at least one layer ~~the acoustic mirror has a plurality of layers~~ with ~~a~~ high acoustic impedance includes a plurality of layers which are structured.

3. (Currently Amended) A component according to claim 2, wherein said at least one layer ~~the mirror layers~~ with high acoustic impedance is ~~are~~ formed of a material selected from

a group consisting of tungsten and molybdenum, and said at least one layer ~~the mirror layers~~ with ~~the~~ low impedance is ~~are~~ formed of silicon oxide.

Claims 4. and 5. (Cancelled)

6. (Currently Amended) A component ~~according to claim 5, which includes~~ operating with bulk acoustic waves, said component comprising :

a carrier substrate;

a lower electrode that faces said carrier substrate;

an upper electrode;

a piezoelectric layer between said lower electrode and said upper electrode, said piezoelectric layer comprising a multi-layer assembly;

an acoustic mirror between said carrier substrate and said lower electrode, said acoustic mirror comprising at least one layer with a high acoustic impedance and at least one layer with low acoustic impedance arranged in a stack, said at least one layer of low acoustic impedance including an uppermost mirror layer of said stack, said uppermost mirror layer exhibiting a varying thickness, an upper boundary surface of said uppermost mirror layer being planar to said lower electrode, and said uppermost layer enclosing structures of said structured layer and forming a seal with a layer of said at least one layer with a low acoustic impedance or with said carrier substrate outside of a area covered by said structure;

an additional piezoelectric layer being formed on said upper electrode and an additional electrode on said additional piezoelectric layer;

at least a partially permeable coupling layer ~~being provided~~ between said ~~the~~ upper electrode and said ~~the at least one~~ additional piezoelectric layer; and

a second additional electrode ~~is arranged~~ between said at least a partially permeable ~~the~~ coupling layer and said ~~the at least one~~ additional piezoelectric layer.

7. (Currently Amended) A component ~~according to claim 1, wherein the~~ operating with bulk acoustic waves, said component comprising :

a carrier substrate;

a lower electrode that faces said carrier substrate;

an upper electrode;

a piezoelectric layer between said lower electrode and said upper electrode, said piezoelectric layer comprising a multi-layer assembly; and

an acoustic mirror between said carrier substrate and said lower electrode, said acoustic mirror comprising at least one layer with a high acoustic impedance and at least one layer with low acoustic impedance arranged in a stack, said at least one layer of low acoustic impedance including an uppermost mirror layer of said stack, said uppermost mirror layer exhibiting a varying thickness, an upper boundary surface of said uppermost mirror layer being planar to said lower electrode, and said uppermost layer enclosing structures of said structured layer and forming a seal with a layer of said at least one layer with a low acoustic impedance or with said carrier substrate outside of a area covered by said structure

said carrier substrate including ~~comprises~~ a plurality of dielectric layers with at least one metallized plane being provided between successive ones of said dielectric layers.

8. (Currently Amended) A component according to claim 1, wherein at least one of said upper electrode and said lower electrode ~~the electrodes~~ is formed by a plurality of layers.

9. (Currently Amended) A component according to claim 1, wherein said at least one ~~the mirror~~ layer with high acoustic impedance is of a metal selected from a group consisting of tungsten and molybdenum, and said at least one ~~the mirror~~ layer with a low acoustic impedance is formed of silicon oxide.

10. (Currently Amended) A method to produce a component operating with bulk acoustic waves, said method comprising the steps of:

providing a carrier substrate;

forming an acoustic mirror on the carrier substrate by depositing a layer with a high acoustic impedance on the carrier substrate[[,]] ;

structuring the layer of high acoustic impedance to form a structured layer[[,]] ;
depositing an uppermost mirror layer with a low acoustic impedance on the structured layer;
thinning and planarizing an ~~the~~ upper surface of the uppermost mirror layer to form a planar surface;
forming a lower electrode on the planar surface;
forming a structured piezoelectric layer on the lower electrode; and
then forming an upper electrode on the structured piezoelectric layer.

11. (Currently Amended) A method according to claim 10, wherein the step of thinning the uppermost mirror layer occurs by ~~means of~~ chemical mechanical polishing.

12. (Currently Amended) A method according to claim 10, which includes, prior to depositing the uppermost mirror layer,
depositing an additional layer of low acoustic impedance on the structured layer,
depositing a second layer of high acoustic impedance on the additional layer, and
structuring the second layer to form a second structured layer so that the uppermost layer is applied on the second structured layer.

13. (Currently Amended) A method according to claim 12, wherein the step of thinning the uppermost layer occurs by ~~means of~~ chemical mechanical polishing.

14.(Original) A method according to claim 10, which includes, subsequent to depositing the upper electrode on the piezoelectric layer,
depositing a coupling layer,
then forming a lower electrode of a second resonator followed by a second piezoelectric layer and a second upper electrode on the coupling layer.

15.(New) A component according to claim 6, wherein said at least one layer with ~~a~~ high acoustic impedance includes a plurality of layers which are structured.

16. (New) A component according to claim 15, wherein said at least one layer with high acoustic impedance is formed of a material selected from a group consisting of tungsten and molybdenum, and said at least one layer with low impedance is formed of silicon oxide.

17. (New) A component according to claim 6, wherein at least one of said upper electrode and said lower electrode is formed by a plurality of layers.

18. (New) A component according to claim 6, wherein said at least one layer with high acoustic impedance is of a metal selected from a group consisting of tungsten and molybdenum, and said at least one layer with a low acoustic impedance is formed of silicon oxide.

19. (New) A component according to claim 7, wherein said at least one layer with a high acoustic impedance includes a plurality of layers which are structured.

20. (New) A component according to claim 19, wherein said at least one layer with high acoustic impedance is formed of a material selected from a group consisting of tungsten and molybdenum, and said at least one layer with low impedance is formed of silicon oxide.

21. (New) A component according to claim 7, wherein at least one of said upper electrode and said lower electrode is formed by a plurality of layers.

22. (New) A component according to claim 7, wherein said at least one layer with high acoustic impedance is of a metal selected from a group consisting of tungsten and molybdenum, and said at least one layer with a low acoustic impedance is formed of silicon oxide.